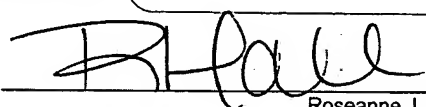


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Roseanne J. Hall

APPLICATION FOR LETTERS PATENT

UNITED STATES OF AMERICA

Be it known that I, **Wayne J. KRAUSE**, residing at 157 Willis Road, Sharpsburg, Georgia 30277, a citizen of the United States, have invented certain new and useful improvements in

COLLAPSIBLE, PORTABLE, WEIGHT-SUPPORTING DEVICES

of which the following is a specification.

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COLLAPSIBLE, PORTABLE WEIGHT SUPPORTING DEVICES

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the priority benefit of U.S. Provisional Patent Application No. 60/509,605, filed on October 8, 2003, and U.S. Provisional Patent Application No. 60/456,158, filed on March 19, 2003, both of which are hereby incorporated by reference in their entirety.

FIELD OF THE INVENTION

[0002] The present invention relates generally to the field of medical devices and, more particularly, to bath safety devices such as commodes, bath seats, and transfer benches that are collapsible and portable.

BACKGROUND OF THE INVENTION

[0003] Persons who are elderly and/or disabled encounter unique difficulties when using conventional bathtubs/showers and commodes. To make things easier and safer for these people, a number of specialized bath safety devices have been developed. These devices include commodes, bath seats, and transfer benches. The commodes are designed for bedside use and/or for use in conjunction with conventional toilets. The bath seats enable the user to sit down when in the shower. And the transfer benches are used for getting into and out of the bathtub by sitting down on them and swinging your legs over the bath tub side wall. These devices all provide enhanced safety to the users.

[0004] But when not in use, these bath safety devices take up a lot a space in the user's apartment or house. And they are too bulky to easily carry along when the user goes on vacation, for example, to stay with relatives over the holidays. In addition,

even when the components are unassembled in a shipping container for storage and transportation, they still take up a lot of space in a store, warehouse, or truck. Furthermore, before these devices are delivered to the elderly and/or disabled user, they first have to be assembled. All known bath safety devices include assembly hardware, and require significant time and the use of tools to assemble.

[0005] Accordingly, there is a need for bath safety devices and other weight-supporting devices that store in a smaller space and that are quicker and easier to assemble. It is to the provision of such devices that the present invention is primarily directed.

SUMMARY OF THE INVENTION

[0006] The present invention includes collapsible, portable, weight-supporting devices such as bath safety products. In exemplary embodiments, there are provided commodes, transfer benches, and bath seats. In alternative embodiments, there are provided other collapsible, portable, weight-supporting devices such as walkers.

[0007] Generally described, the invention provides collapsible, portable, weight-supporting devices comprising a frame assembly including frame members and hinge brackets for laterally collapsing the frame assembly; and a seat assembly that is removably coupled to the frame assembly. Preferably, the frame assembly is adapted for assembling without the need for tools or hardware. For some devices such as commodes, the seat assembly preferably comprises a toilet seat having integrally formed pivotal couplings for removable attachment directly to the frame members; and an integrally formed splash guard/collection pail having a side wall and a removable bottom. And for some devices such as transfer benches and bath seats, the seat assembly preferably has a first channel and a second channel for removably receiving the frame members for mounting the seat assembly to the frame assembly without the need for tools or hardware.

[0008] In another aspect of the invention, there is provided a hinge bracket for coupling together frame members of a weight-supporting device. The hinge bracket preferably comprises a body having at least one end opening and at least one guide slot, the end opening receiving a first one of the frame members, and the guide slot receiving at least one engagement button extending from and depressible into the first frame member. The first frame member is detachably coupled to the hinge bracket so that the first frame member can be easily decoupled from the hinge bracket by hand without using any tools or hardware. The first frame member pivots relative to the hinge bracket so that the device can be laterally collapsed. The hinge bracket is provided without a separate locking assembly for securing the frame members in a normal uncollapsed position for use. And the hinge bracket is adapted for use on any of four corners of the device so that different left and right and/or front and back hinge brackets are not required. In addition, the hinge bracket includes an opening extending all the way through it from end to end for receiving two frame members that seat together telescopically.

[0009] An in another aspect of the invention, there is provided a method of assembling a weight-supporting device. The method comprises providing frame members, hinge brackets, and a seat assembly; mounting the hinge brackets onto the frame members by hand, without tools or hardware, to form a frame; and mounting the seat assembly onto the frame by hand, without tools or hardware. Preferably, the method further comprises converting a commode from a configuration for stand-alone bedside use to a configuration for use with a toilet by providing the seat assembly as a toilet seat and a collection pail with a removable bottom, and removing the pail bottom to form a splash guard.

[0010] Accordingly, the present invention provides advantages over other bath safety products. In particular, commodes, bath seats, transfer benches, and/or other weight-supporting devices according to the present invention can fit into a smaller package when unassembled, can be assembled quickly and easily without any tools,

after assembly are easily collapsible into a compact, portable configuration for convenient storage and transporting, and later can be easily uncollapsed for use.

[0011] These and other aspects, features, and advantages of the invention will be understood with reference to the drawing figures and detailed description herein, and will be realized by means of the various elements and combinations particularly pointed out in the appended claims. It is to be understood that both the foregoing general description and the following brief description of the drawings and detailed description of the invention are exemplary and explanatory of preferred embodiments of the invention, and are not restrictive of the invention, as claimed.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

[0012] FIG. 1 is a front view of a commode according to a first exemplary embodiment of the present invention, showing the commode in an assembled state and an uncollapsed position ready for use.

[0013] FIG. 2 is a side view of the commode of FIG. 1.

[0014] FIG. 3 is a front view of the commode of FIG. 1, in an assembled state and a collapsed position for compact storage.

[0015] FIG. 4 is a side view of the commode of FIG. 3.

[0016] FIG. 5 is a top view of the commode of FIG. 4.

[0017] FIG. 6 is a detail side view of a hinge bracket and portions of frame members of the commode of FIG. 1, showing the hinge bracket assembled onto the frame members in an uncollapsed position.

[0018] FIG. 7 shows the hinge bracket and frame member portions of FIG. 6, with the hinge bracket shown in cross section.

[0019] FIG. 8 shows the frame member portions of FIG. 6 unassembled and without the frame members.

[0020] FIG. 9 is a front view of a transfer bench according to a second exemplary embodiment of the present invention, showing the transfer bench in an assembled state

and an uncollapsed position ready for use.

[0021] FIG. 10 is a side view of the transfer bench of FIG. 9.

[0022] FIG. 11 is a front view of a bath seat according to a third exemplary embodiment of the present invention, showing the bath seat in an assembled state and an uncollapsed position ready for use.

[0023] FIG. 12 is a side view of the bath seat of FIG. 11.

[0024] FIG. 13 is a top view of a universal seat member of the bath seat of FIG. 12.

[0025] FIG. 14 is a side view of the seat member of FIG. 13.

[0026] FIG. 15 is a detail side view of the seat member of FIG. 13 being installed onto frames members of the bath seat.

[0027] FIG. 16 is a detail side view of an alternative coupling for mounting the seat member onto the frames members.

[0028] FIG. 17 is a detail side view of another alternative coupling for mounting the seat member onto the frames members.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0029] Referring now to the drawing figures, wherein like reference numerals represent like parts throughout, exemplary forms of the present invention will now be described. It is to be understood that this invention is not limited to the specific devices, methods, conditions, or parameters described and/or shown herein, and that the terminology used herein is for the purpose of describing particular embodiments by way of example only. Thus, the terminology is intended to be broadly construed and is not intended to be limiting of the claimed invention. In addition, as used in the specification including the appended claims, the singular forms "a," "an," and "the" include the plural, plural forms include the singular, and reference to a particular numerical value includes at least that particular value, unless the context clearly dictates otherwise. Furthermore, any methods described herein are not intended to be limited to the

sequence of steps described but can be carried out in other sequences, unless expressly stated otherwise herein.

[0030] The present invention includes innovative commodes, bath seats, and transfer benches that fit into a smaller package when unassembled, that can be assembled quickly and easily without any tools, that after assembly are easily collapsible into a compact, portable configuration for convenient storage and transporting, and that later can be easily uncollapsed for use. In addition, the invention includes a unique seat and convertible collection pail/splash guard that can be provided with the commode or as a separate replacement kit. Furthermore, the invention includes unique collapsible frames and hinge brackets that can be used in these devices, as well as other bath safety devices and weight supporting devices that incorporate these collapsible frames and hinge brackets. Moreover, the invention includes a method of assembling a bath safety product without the use of tools or hardware.

[0031] FIGS. 1-5 show a collapsible, portable commode 10 according to a first exemplary embodiment of the present invention. The commode 10 includes a frame assembly and a seat assembly. The frame assembly includes a front and a rear seat brace 12, four leg extensions 14, two side armrests 16, and two side lower braces 18. Optionally, the commode 10 may include a back brace 20 that attaches to the side armrests 16 by conventional fasteners such as bolts, screws, or pins tethered to the commode by a chain or the like. The seat braces 12, leg extensions 14, armrests 16, lower braces 18, and back brace 20 are preferably made of tubular aluminum. Alternatively, these components can be made of steel, plastic, graphite, a composite, or another material selected for the strength and weight desired in a particular application. The frame assembly further includes at least four hinge brackets 22, which are preferably made of glass-filled nylon but could be made of metal, hard plastic, or another material selected for the desired strength and weight. Of course, the commode 10 can be provided with another number and type of structural frame members and hinge brackets, as may be desired.

[0032] The front and rear seat braces 12 are preferably generally U-shaped, with two generally vertical legs and a generally horizontal central member. Because all four legs are vertical and overlap with the armrests 16 and the lower braces 18 (as described below), the legs are less likely to deflect, contributing to a high-strength and stable frame.

[0033] The leg extensions 14 are coupled to the vertical legs of the seat braces 12, preferably adjustably and removably coupled. For example, the leg extensions 14 may be telescopically received in the seat braces 12, or vice versa, so that they slide with respect to each other. And the leg extensions 14 may have a series of holes that receive pushpins extending from and depressible into the seat braces 12, or vice versa. In this way, the commode 10 can be shipped more compactly with the leg extensions 14 not coupled to and extending from the seat braces 14, and then the leg extensions can be easily assembled onto the seat braces for use and easily adjusted for the particular user.

[0034] The side armrests 16 and side lower braces 18 are each preferably generally U-shaped, with two generally vertical side members and a generally horizontal central member. The left side armrest 16 and the left side lower brace 18 are oppositely arranged with one inverted relative to the other, and their vertical side members coupled together by two of the hinge brackets 22. Similarly, the right side armrest 16 and the right side lower brace 18 are oppositely arranged with one inverted relative to the other, and their vertical side members coupled together by the other two hinge brackets 22. And the side armrests 16 and side lower braces 18 are hingedly coupled to the seat braces 12 by the hinge brackets 22 for permitting at least 90 degree rotation.

[0035] When the frame assembly is assembled, the side members of the side armrests 16 and of the side lower braces 18 are vertical and overlap with the legs of the seat braces 12 (see FIG. 2), so the side members and the legs are less likely to deflect, contributing to a high-strength and stable frame. In particular, the side lower braces 18

help keep the leg extensions 14 and the legs of the seat braces 12 from deflecting outward, resulting in less or no lateral forces on the seat assembly.

[0036] In addition, the side armrests 16 and side lower braces 18 can be easily decoupled from the hinge brackets 22, which may be permanently mounted to the seat braces 12. In this way, the commode 10 can be shipped more compactly with the side armrests 16, the side lower braces 18, and the seat braces 12 decoupled from each other and arranged in a stacked configuration. And then the side armrests 16 and the side lower braces 18 can be easily assembled onto the seat braces 12 for use of the commode 10.

[0037] Furthermore, after the commode 10 is assembled for use, it can be collapsed into a compact arrangement for storage and portability. FIGS. 1 and 2 show the commode 10 in the normal uncollapsed position for use, and FIGS. 3-5 show the commode folded laterally into the collapsed position for storage and portability. No other known commode or other bath safety device can be collapsed so easily into such a small space.

[0038] In an alternative embodiment, the side armrests and the side lower braces are provided integrally as one-piece C-shaped or O-shaped members, which can be snapped, clipped, or otherwise coupled to hinge brackets adapted for such a coupling arrangement. In this arrangement, similar frame assembly strength is accomplished, but the one-piece component is larger than the two-piece armrest and lower brace arrangement. In a related alternative embodiment, the C- or O-shaped members include hinges so that they can be folded over on each other into a more compact arrangement. And in still another alternative embodiment, the commode includes two spaced apart hinge brackets per corner, eight hinge brackets total, with the ends of the vertical members of the side armrests and the side lower braces also spaced apart. In this configuration the horizontal members of the side armrests and of the side lower braces are spaced farther apart to provide greater strength and stability.

[0039] Turning now to the seat assembly, it includes a toilet seat 24 and a splash guard or collection pail 26. Typically, the commode 10 is provided with a splash guard (for use with a conventional toilet), a collection pail (for use as a stand-alone, e.g., bedside, unit), or both (though both are not typically used at the same time). For convenience, both the splash guard and the collection pail are indicated in the drawing figures by reference character 26. The toilet seat 24 and splash guard/pail 26 are preferably made of plastic, but alternatively can be made of metal, a composite, or another material selected for the desired strength, weight, and user comfort.

[0040] Because of the above-described structural strength and stability provided by the unique arrangement of the side armrests 16, the side lower braces 18, and the seat braces 12, there are little or no lateral forces on the seat assembly. So the seat assembly can be designed to bear little or no lateral load, and it will not “pop off” of the seat braces. This is in stark contrast to conventional commodes, which include a metal pail bracket that supports the splash guard or collection pail and that is welded to the frame to provide structural strength. This conventional configuration does not break down into a compact arrangement.

[0041] The toilet seat 24 and the splash guard/pail 26 are preferably pivotal and removable from the frame assembly. For example, the toilet seat 24 and the splash guard/pail 26 may have clamps 28 and 30, respectively, that snap, clip, or otherwise releasably engage the seat braces 12, or vice versa, and that permit at least 90 degree rotation thereabout. In this way, the toilet seat 24 and the splash guard/pail 26 can be easily mounted onto the seat braces 12, contributing to easy assembly of the commode 10. And one side of the splash guard/pail 26 can be detached from one of the seat braces 12, then the toilet seat 24 and the splash guard/pail 26 pivoted downward into a generally vertical position, for compactness for storage and portability (see FIGS. 3-5). Moreover, the splash guard/pail 26 attaches directly to the seat braces 12, so the metal pail bracket of the prior art commodes is eliminated.

[0042] Preferably, the splash guard/pail 26 is provided by a single piece with a side wall and a removable bottom. For example, the bottom may be molded or otherwise formed integrally with the side wall, with a thinner or otherwise severable connection zone so that the bottom can be easily cut or otherwise separated from the side wall using a household knife, scissors, etc. In this way, a single piece, the combination splash guard/pail 26, can be provided with the commode 10. And then the combination splash guard/pail 26 can be left as is for use as a pail or it can be converted to a splash guard, depending on the user's particular needs.

[0043] In an alternative embodiment, the commode is provided in an extra-wide configuration for larger and heavier persons. The extra-wide configuration has seat braces with horizontal central members that are longer than those of the standard configuration. In a typical commercial embodiment of the extra-wide configuration, the seat brace horizontal members are 24 inches long, compared to the 20-inch long seat brace horizontal members of a typical commercial embodiment of the standard configuration. In addition, the toilet seat of the extra-wide configuration additionally has a clamp or other pivotal coupling at the front that removably mounts onto the front seat brace for added strength.

[0044] Referring now to FIGS. 6-8, additional details of the hinge brackets 22 will now be described. FIG. 6 shows one of the hinge brackets 22 mounted to the side armrests (upper struts) 16, the side lower braces (lower struts) 18, and the seat braces 12. FIG. 7 is similar to FIG. 8, but shows the hinge bracket 22 in cross section. And FIG. 8 is an exploded view of the side armrests 16, the side lower braces 18, and the seat braces 12.

[0045] It will be understood that the bath safety devices described herein, and other weight supporting devices, can be provided with these hinge brackets 22 or with other hinges, and/or with this frame assembly or with another frame assembly, as may be desired. And these hinge brackets 22 and this frame assembly can be adapted for use on other devices where a strong and compactly collapsible frame is desirable. In

addition, this hinge bracket 22 is an improved version of the hinge bracket disclosed in U.S. Patent No. 5,188,139 to Garelick, which is hereby incorporated herein by reference.

[0046] As shown in FIGS. 6 and 7, the hinge brackets 22 are preferably permanently mounted to the seat braces 12, for example, by fasteners such as rivets, bolts, screws, or pins. And the hinge brackets 22 preferably receive (in opposite ends) and detachably couple to the side armrests 16 and the side lower braces 18. For example, the hinge brackets 22 may be provided by a body 23 having a opening 25 that extends all the way through the body from end to end, and having guide slots 32 in the body for receiving pushpins (engagement buttons) 34 that extend from and are depressible into the side armrests 16 and the side lower braces 18. This guide slot 32 and pushpin 34 arrangement permits the side armrests 16 and the side lower braces 18 to fold at least 90 degrees relative to each other for collapsing the commode 10. In addition, this unique arrangement permits the side armrests 16 and the side lower braces 18 to be easily decoupled from the hinge brackets 22, without using any tools, for more compact storage and portability. Furthermore, in this configuration, the same hinge bracket 22 can be provided for all four corners of the commode 10, so that different left and right and/or front and back hinge brackets are not required. Moreover, because of the above-described structural strength and stability provided by the unique arrangement of the side armrests 16, the side lower braces 18, and the seat braces 12, the hinge brackets 22 do not need to be provided with a locking assembly for securing the frame in the normal uncollapsed position for use.

[0047] As shown in FIGS. 7 and 8, in order to provide greater strength, stability, and durability, the frame assembly can be provided with side armrests 16 and side lower braces 18 that seat together telescopically. For example, the side armrests 16 may have reduced segments 36 that are telescopically received in the side lower braces 18, or vice versa. The reduced segments 36 of the side armrests 16 may be formed by swaging or other fabrication techniques known in the art. In addition, the

pushpins 34 may be positioned extending from the reduced segments 36, and the side lower braces 18 may have engagement holes 26 that releasably receive the pushpins. In this way, the side armrests 16 and the side lower braces 18 are coupled together for added strength. In an alternative embodiment, the side armrests 16 and the side lower braces 18 are telescopically configured, but the pushpins 34 are positioned above the reduced segment 36 of the side armrests 16. And in another alternative embodiment, the side armrests 16 abut and are supported by the side lower braces 18, and thus are not telescopically configured.

[0048] FIGS. 9 and 10 show a collapsible transfer bench 110 according to a second exemplary embodiment of the present invention. In this embodiment, the transfer bench 110 includes a frame assembly that is similar to that of the first embodiment. Accordingly, the frame assembly includes a front and a rear seat brace 112, four leg extensions 114, one or more side armrests 116 (one may be higher than the other), two side lower braces 118, and four or another number of hinge brackets 122. In addition, the transfer bench 110 may include a back brace 120 to which is mounted a backrest 121. The backrest 121 is preferably made of plastic or another material and is easily attached to the back brace 120. And the back brace 120 is preferably removably mounted to the seat braces 112 by couplings 140 such as telescopic U-clamps or the like. Preferably, the removable couplings 140 permit the back brace 120 to be mounted to the seat braces 112 from either the front or the back. In addition, the seat assembly includes a seat member 125 that is removably (and preferably pivotally) coupled to the seat braces 112 by clamps 127 or the like. By utilizing the unique frame and hinge bracket assembly in combination with the removable seat assembly, the transfer bench 110 can be easily collapsed into a compact space for storage and portability.

[0049] FIGS. 11 and 12 show a collapsible bath seat 220 according to a third exemplary embodiment of the present invention. In this embodiment, the bath seat 220 includes a frame assembly that is somewhat similar to that of the first and second

embodiments. Accordingly, the frame assembly includes a front and a rear brace 212, four leg extensions 214, one or more side braces 216 (the side lower braces are not necessarily needed in this design), and four or another number of hinge brackets 222. In addition, the collapsible bath seat 220 preferably includes a back brace 220 to which is mounted a backrest 221. And the collapsible bath seat 220 preferably includes a seat member 225 that is removably (and preferably pivotally) coupled to the seat braces 212 by clamps 227 or the like. By utilizing the unique frame and hinge bracket assembly in combination with the removable seat assembly, the bath seat 220 can be easily collapsed into a compact space for storage and portability.

[0050] In this third embodiment, the front/rear braces 212 and the side braces 216 are switched relative to the first and second embodiments, as best shown in FIG. 11 compared to FIGS. 1 and 9. And the side members of the front/rear braces 212 and the side braces 216 are not necessarily vertical, but instead may be angled to provide a wider and thus more stable frame.

[0051] In addition, conventional bath seats have two inverted U-shaped frame members that crisscross (so that a plan view looks like an "X"). Because these frame members are diagonally arranged (in the plan view), they are long and thus take up more packing space. On the other hand, the frame assembly of the bath seat 220 of the present invention does not have crisscrossing frame members, so they are shorter and can be disassembled and stored into a smaller package.

[0052] In an alternative embodiment, there is provided an all-in-one frame assembly that can be used in a commode, a bath seat, a transfer bench, or other bath safety or weight supporting device. In yet another alternative embodiment, there is provided a walker incorporating the frame and hinge body assembly.

[0053] FIGS. 13 - 15 show a universal seat member 325 that can be used with the collapsible bath seat 220 of the third exemplary embodiment, with the collapsible transfer bench 110 of the second exemplary embodiment (two seat members 315 are installed side-by-side in some embodiments), or even with the collapsible commode 10

of the first exemplary embodiment (as a toilet seat). The seat member 325 has a first channel 327 in one of its sides 329 and a second channel 331 in its bottom surface 333 adjacent the opposite side 335. The channels 331 are sized and shaped to receive the braces 312 of the frame assembly, preferably with a snug fit so that the braces snap in and out.

[0054] The installation of the seat member 325 is shown in FIG. 15. The first channel 327 is placed onto one of the braces 312. Then the seat member 325 is pivoted down in the direction of the arrow until the second channel 331 receives the opposite one of the braces 312. In this position the seat member 325 is generally flat for use, and it helps hold the braces 312 in place. Because the channels 327 and 331 are formed in non-parallel surfaces, their orientation helps prevent both lateral and vertical movement, providing increased stability and strength. And the seat member 325 can later be removed by reversing these steps. In this configuration, the seat member 315 can be quickly and easily installed and removed without any hardware or tools.

[0055] FIG. 16 shows an alternative embodiment of the seat member 325a, with the first channel 327a having a frictional lining 337. For example, the frictional lining 337 may be provided by no-slip tape, a coarse surface texture formed during the molding or other fabrication process, or by other means. Similarly, the second channel may have a frictional lining. In this configuration, the channels more securely hold the braces in place. FIG. 17 shows another alternative embodiment of the seat member 325b, with the first channel 331b formed in the bottom surface 333b (instead of in the end) and oriented at a non-perpendicular angle 339 to the bottom surface. When the seat member 325b is pivoted downward with one of the braces 312 received in the first channel 331b, the angle 339 of the first channel locks the brace inside to prevent vertical movement, and having both channels in the same bottom surface prevents horizontal movement.

[0056] In addition, the present invention includes a method of assembling the above-described devices or other bath safety and/or weight supporting devices. The method includes the steps of providing frame members, hinge brackets, and seat members, assembling the frame members and the hinge brackets to form a frame, and attaching the seat members to the frame.

[0057] Further more, the present invention includes a method of converting a commode from a configuration for stand-alone bedside use to a configuration for use with a toilet. The method includes the steps of providing a commode having a frame assembly and a collection pail with a removable bottom, removing the pail bottom, and installing the bottomless pail on the frame assembly for use as a splash guard.

[0058] Accordingly, the present invention provides advantages over other bath safety products. In particular, commodes, bath seats, transfer benches, and/or other bath safety devices according to the present invention can fit into a smaller package when unassembled, can be assembled quickly and easily without any tools, after assembly are easily collapsible into a compact, portable configuration for convenient storage and transporting, and later can be easily uncollapsed for use.

[0059] While the invention has been shown and described in exemplary forms, it will be apparent to those skilled in the art that many modifications, additions, and deletions can be made therein without departing from the spirit and scope of the invention as defined by the following claims.